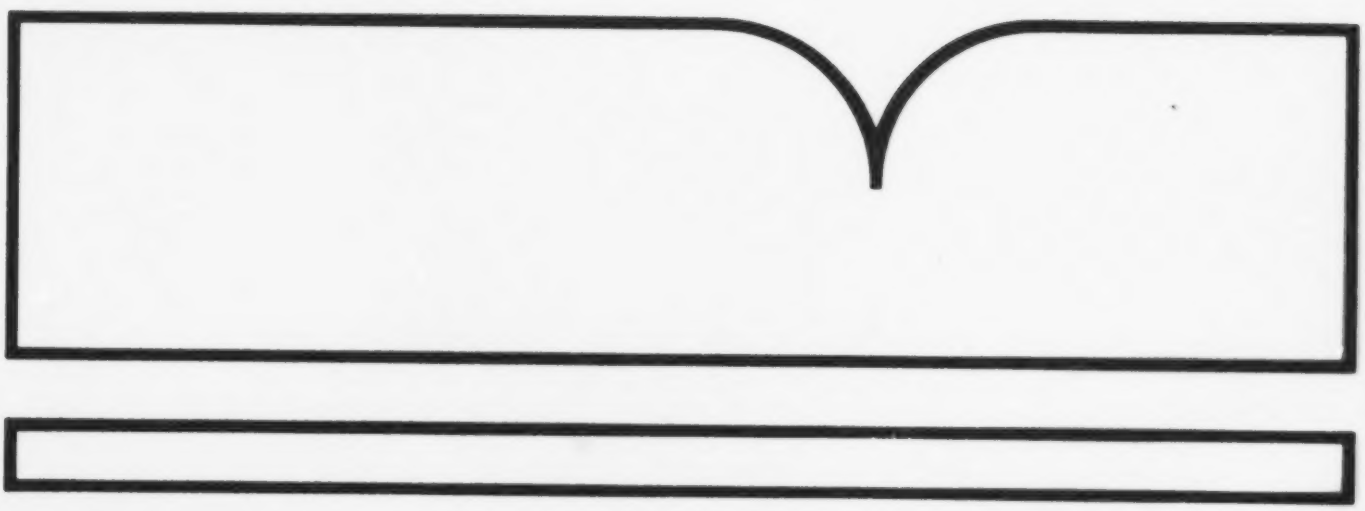
PB86-224862

Superfund Enforcement Decision Document (EPA Region 4) Pepper's Steel and Alloys, Inc. Site Medley, Dade County, Florida, March 1986

(U.S.) Environmental Protection Agency
Washington, DC

12 Mar 86



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Environmental Protection
Agency

Office of
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EPA/ROD/R04-86/008
March 1986

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EPA

Superfund Enforcement Decision Document:

Pepper's Steel, FL

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15. SUPPLEMENTARY NOTES

16. ABSTRACT

The Pepper's Steel and Alloys site occupies 30 acres known as Tracts 44, 45, and 46 in the Town of Medley, Florida. Medley is located in northern Dade County, approximately 10 miles northwest of Miami and 13 miles inland from the Atlantic Ocean. Additionally, the Pepper's Steel site is located in the "unsewered industrial area" and near three other Superfund sites referenced in the Biscayne Aquifer ROD.

Since the mid-1960s the Pepper's Steel site has been the location of several businesses, many of which are still operating onsite. Operations have included the manufacture of batteries, pre-cast concrete products and fiberglass boats, as well as the repair and service of trucks and heavy equipment. Also, sandblasting and painting services, a concrete batching plant and an automobile scrap operation have been or are located on the site. Various trash and waste products from these activities, including parts of rusted machinery, vehicles, aircraft, oil tanks, transformers, underground storage tanks and batteries have been deposited at the site. The contaminants that have been identified within the soil, sediments, and ground water in and around the site include PCBs, organic compounds and heavy metals such as: lead, arsenic, cadmium, chromium, copper, maganese, mercury, zinc, and antimony.

The selected remedial action for this site includes: collection and offsite disposal of all free oil according to TSCA regulations; excavation of soils exceeding 1 ppm PCB,
(See Attached Sheet)

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Record of Decision Pepper's Steel, FL (EDD) Contaminated Media: soil, sediments, gw Key contaminants: PCBs, organics, heavy metals, arsenic, chromium		

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16. ABSTRACT (continued)

1,000 ppm lead, and 5 ppm arsenic; solidification/stabilization of these soils with a cement-type mixture and placement onsite; institutional controls to ensure future land uses compatible with the remedy; and ground water monitoring to ensure the effectiveness of the remedy. Total capital cost for the selected remedial alternative is estimated to be $5,212,000 with O&M costs approximately $42,500 per year.

Enforcement Decision Document
Remedial Alternative Selection

Site

Pepper's Steel and Alloys, Inc.
Medley, Dade County, Florida

Documents Reviewed

I am basing my decision primarily on the following documents and recommendations describing the analysis of the cost and effectiveness of the remedial alternatives for the Pepper's Steel and Alloys site.

- Pepper's Steel and Alloys Remedial Investigation Volumes I & II, CH_2M Hill, November 1985
- Pepper's Steel and Alloys Feasibility Study - draft, CH$_2$M, September 1985
- Response to Comments on Pepper's Steel and Alloys Draft RI Report, CH_2M Hill, November 1985
- Fixation/Stabilization Final Report - Pepper's Steel and Alloys Site, Volume I & II, Florida Power & Light, November 1985
- Summary of Remedial Alternative Selection
- Summaries of 5 technical meetings - 1/7/86-2/27/86
- Responsiveness Summary
- Recommendations from the State of Florida
- Staff recommendations

Description of Selected Remedy

The selected alternative for the Pepper's Steel and Alloys, Inc. site includes:

- Collection of all free oil and disposal offsite according to TSCA regulations.
- Excavation of soils exceeding 1 ppm PCB, 1,000 ppm lead and 5 ppm arsenic.
- Solidification/stabilization of these soils with a cement-type mixture and placement on site.
- Institutional controls to ensure future land uses compatible with the remedy.
- Monitoring of the effectiveness of the remedy.

The solidification/stabilization agent has undergone a development and testing program and a mixture exhibiting satisfactory performance has been determined.

DECLARATIONS

Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and the National Contingency Plan (40 CFR Part 300), I have determined that the remedy described above for the Pepper's Steel and Alloys Site is a cost-effective remedy that provides adequate protection of public health, welfare and the environment. The State of Florida has been consulted and agrees with the remedy. In addition, the action will require monitoring and institutional controls on future land use to ensure the continued effectiveness of the remedy. These activities will be considered part of the approved action. Verbal settlements have been reached between EPA and the responsible parties based on the selected remedy.

I have also determined that the action being taken is a cost-effective alternative when compared to the other remedial options reviewed.

In addition, the off-site transport and treatment or destruction of the PCB contaminated oils is more cost effective than on-site remedies considered.

MAR 12 1986

Date

Jack E. Ravan

Jack E. Ravan
Regional Administrator

Attachments:

Summary of Remedial Alternative Selection
Community Relations Responsiveness Summary

Pepper's Steel and Alloys, Inc.
Summary of Remedial Alternative Selection

SITE LOCATION AND DESCRIPTION

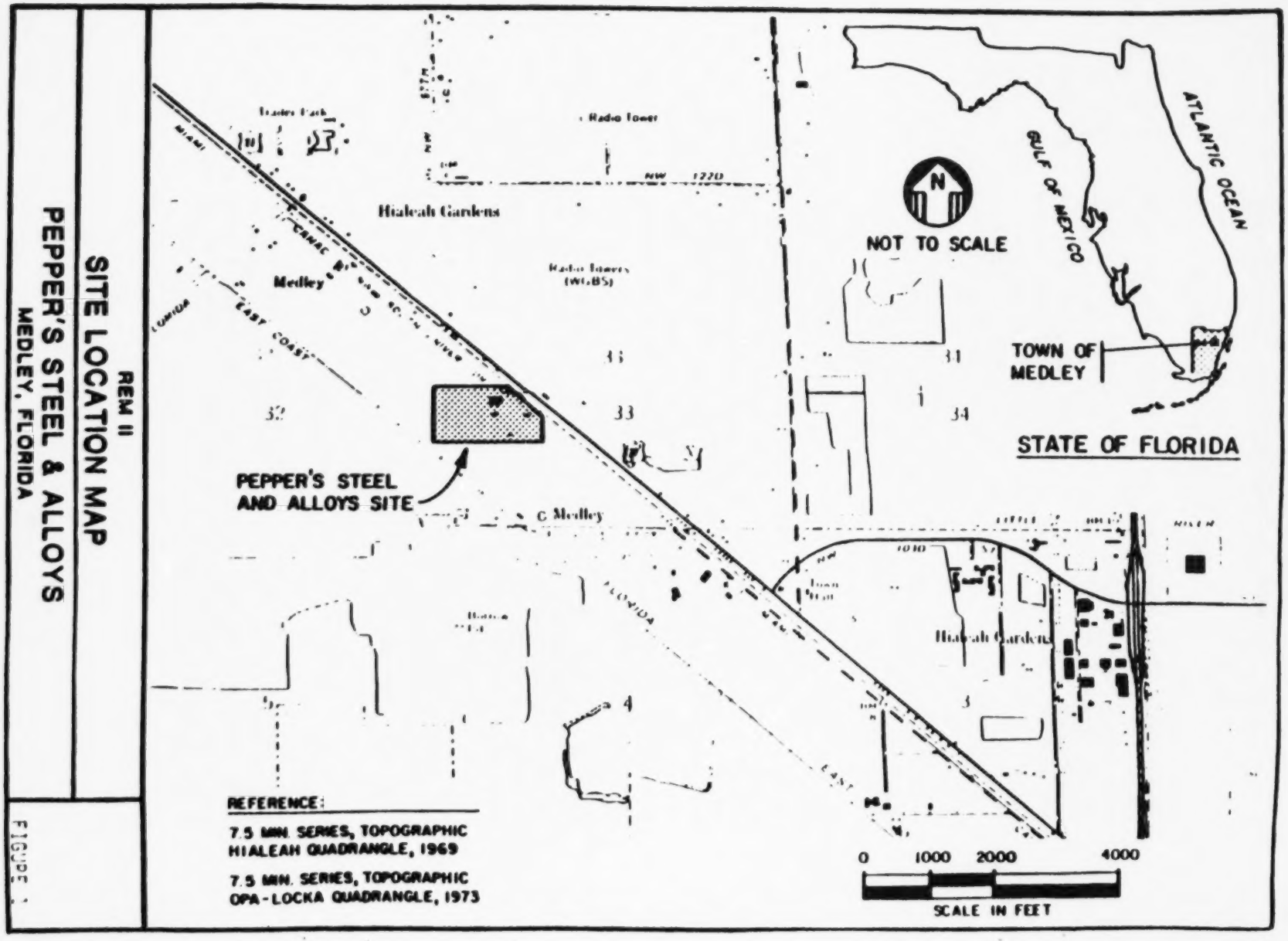
The Pepper's Steel and Alloys site occupies 30 acres known as Tracts 44, 45 and 46 in the town of Medley, Florida. Medley is located in northern Dade County, approximately 10 miles northwest of Miami and 13 miles inland from the Atlantic Ocean. The site is located at approximate coordinates 25°52.5' north latitude and 80° 21.2' west longitude, and is bordered by N.W. South River Drive on the northeast corner, N.W. 109th Street to the south, by the Miami Canal to the east, and a railroad track to the west. See Figure 1 illustrating the site location map. Additionally, the Pepper's Steel site is located in the "unsewered industrial area" and near three other Superfund sites referenced in the Biscayne Aquifer Superfund Study. Figure 2 shows the location of the site in relation to the Northwest, Medley (permanently abandoned due to contamination), Miami Springs and Preston Well Fields. Figure 2 also shows the location of the site in relation to residential areas.

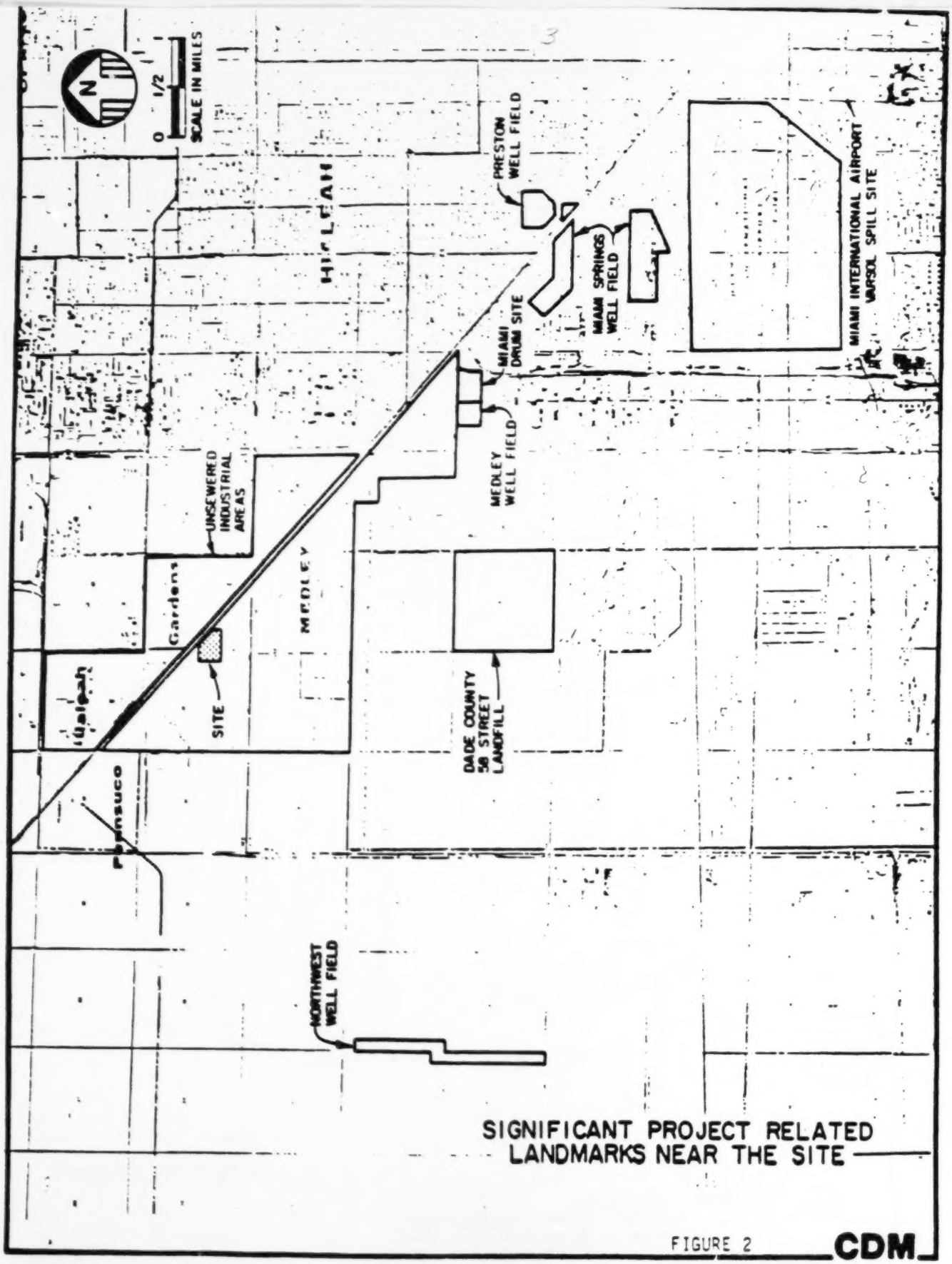
Since the mid-1960's the Pepper's Steel site has been the location of several businesses, many of which are still operating on site. Operations have included the manufacture of batteries, pre-cast concrete products and fiberglass boats, as well as the repair and service of trucks and heavy equipment. Also, sandblasting and painting services, a concrete batching plant and an automobile scrap operation have been or are located on the site. Various trash and waste products from these activities, including parts of rusted machinery, vehicles, aircraft, oil tanks, transformers, underground storage tanks and batteries have been deposited at the site.

The site is relatively flat and consists of layers of rubbish and mixed fill placed above naturally occurring organic loam and peat, which in turn lie above sand and limestone formations. Figures 3 and 4 respectively, illustrate the site topography and underlying geologic conditions. Groundwater is at a depth of about five to six feet below the ground surface. The ground water at the site is part of the Biscayne Aquifer which underlies all of southeast Florida. This is a sole source aquifer and it supplies all of Dade County's water via both municipal well fields and private wells. The site area has municipal water, but private wells still exist and may be used for potable service.

SITE HISTORY

The 30 acre site referred to as the Pepper's Steel and Alloys site in reality consists of three 10 acre tracts. One of these tracts was owned by Mr. Norton Bloom and was the site of the Pepper's Steel & Alloys operation. All three tracts are believed to have received waste from Pepper's Steel and Alloys.


REM II
SITE LOCATION MAP
PEPPER'S STEEL & ALLOYS
MEDLEY, FLORIDA
FIGURE 1
PEPPER'S STEEL AND ALLOYS SITE
Hialeah Gardens
Medley
Radio Tower
NW 122D
NOT TO SCALE
ATLANTIC OCEAN
GULF OF MEXICO
TOWN OF MEDLEY
STATE OF FLORIDA
REFERENCE:
7.5 MIN. SERIES, TOPOGRAPHIC
HIALEAH QUADRANGLE, 1969
7.5 MIN. SERIES, TOPOGRAPHIC
OPA-LOCKA QUADRANGLE, 1973
0 1000 2000 4000
SCALE IN FEET



SIGNIFICANT PROJECT RELATED LANDMARKS NEAR THE SITE

FIGURE 2 CDM

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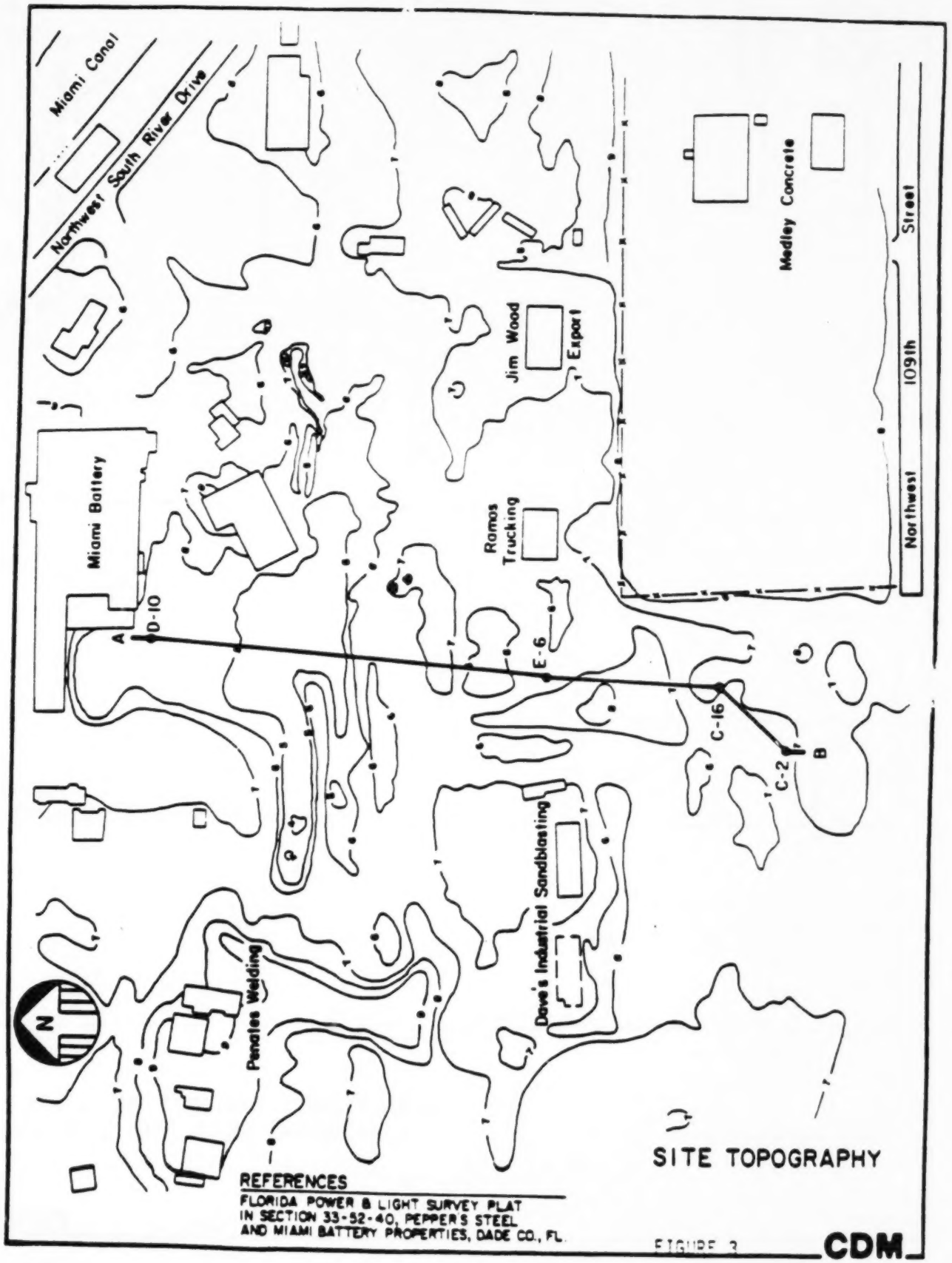

Miami Canal
Northwest South River Drive
Miami Battery
Jim Wood
Export
Ramos Trucking
Medley Concrete
Northwest 109th Street
A
D-10
E-6
C-16
C-2
B
Dave's Industrial Sandblasting
Penales Welding
N
SITE TOPOGRAPHY
REFERENCES
FLORIDA POWER & LIGHT SURVEY PLAT
IN SECTION 33-52-40, PEPPER'S STEEL
AND MIAMI BATTERY PROPERTIES, DADE CO., FL.
FIGURE 3
CDM

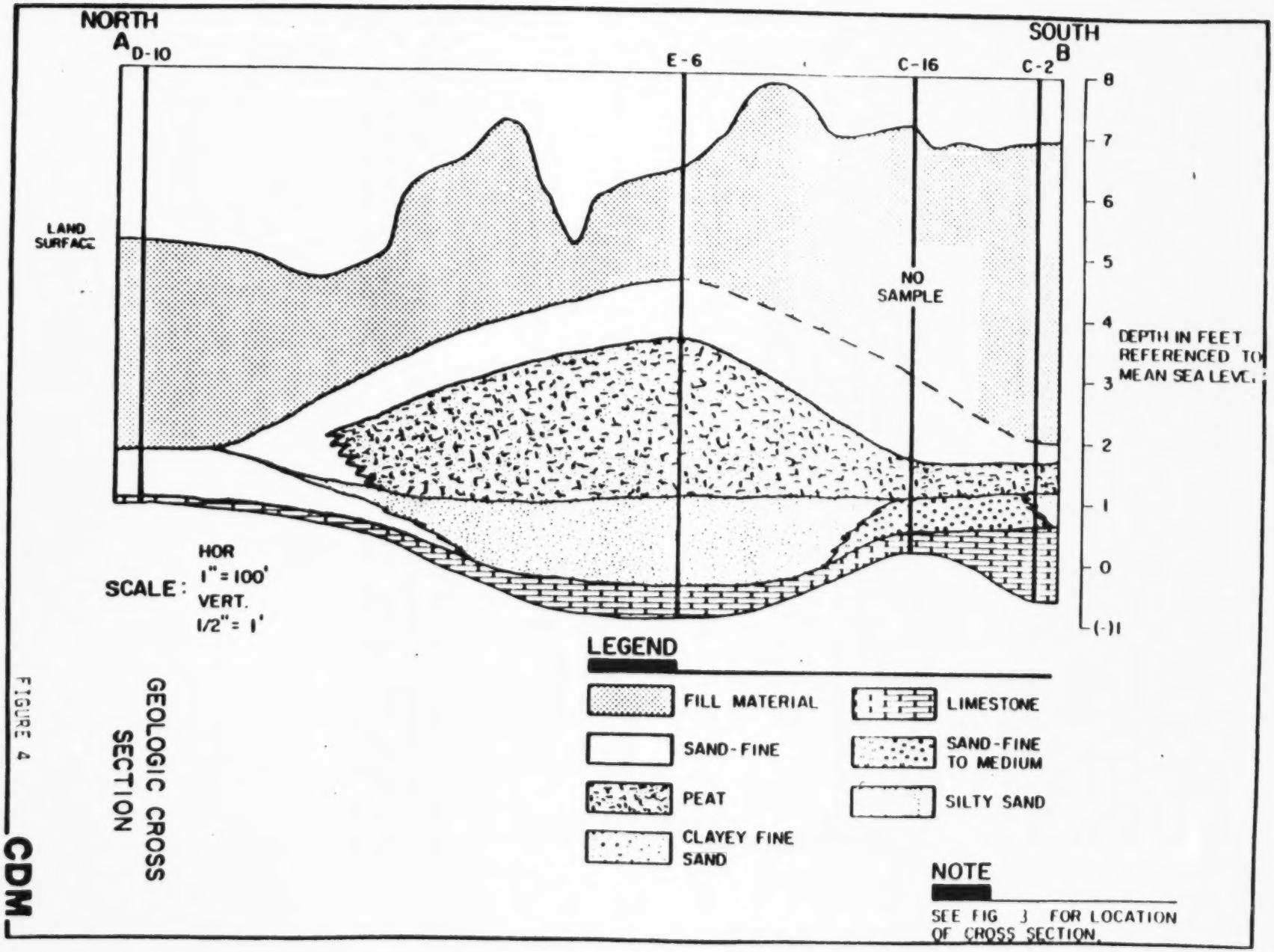


FIGURE 4

GEOLOGIC CROSS SECTION

CDM

The regulatory actions at the Pepper's Steel and Alloys, Inc. site have included responses by both the Dade County Department of Environmental Resources Management (DERM) and the EPA. The first action that EPA was aware of was a citation issued to Pepper's Steel and Alloys, Inc. in 1978 and subsequent sampling and evaluation by DERM and Edward E. Clarke, Engineers-Scientists, Inc. of nearby wells. Subsequently, test pit explorations by DERM in 1982 documented the presence of oil containing PCB in the shallow subsurface materials. This finding precipitated a site exploration performed by NUS for the EPA and immediate removal by EPA in 1983. The site was added to EPA's Superfund National Priorities List in September 1983.

CURRENT SITE STATUS

The contaminants that have been identified within the soil, sediments and groundwater in and around the site include PCBs, organic compounds and heavy metals such as: lead, arsenic, cadmium, chromium, copper, manganese, mercury, zinc and antimony. Of these contaminants found at the site, the Endangerment Assessment conducted for the Pepper's Steel Site identified PCBs, lead and arsenic as being present in soils at the site in concentrations high enough to pose a significant threat to public health, welfare or the environment. Figure 5 outlines the approximate locations of these contaminants at the site.

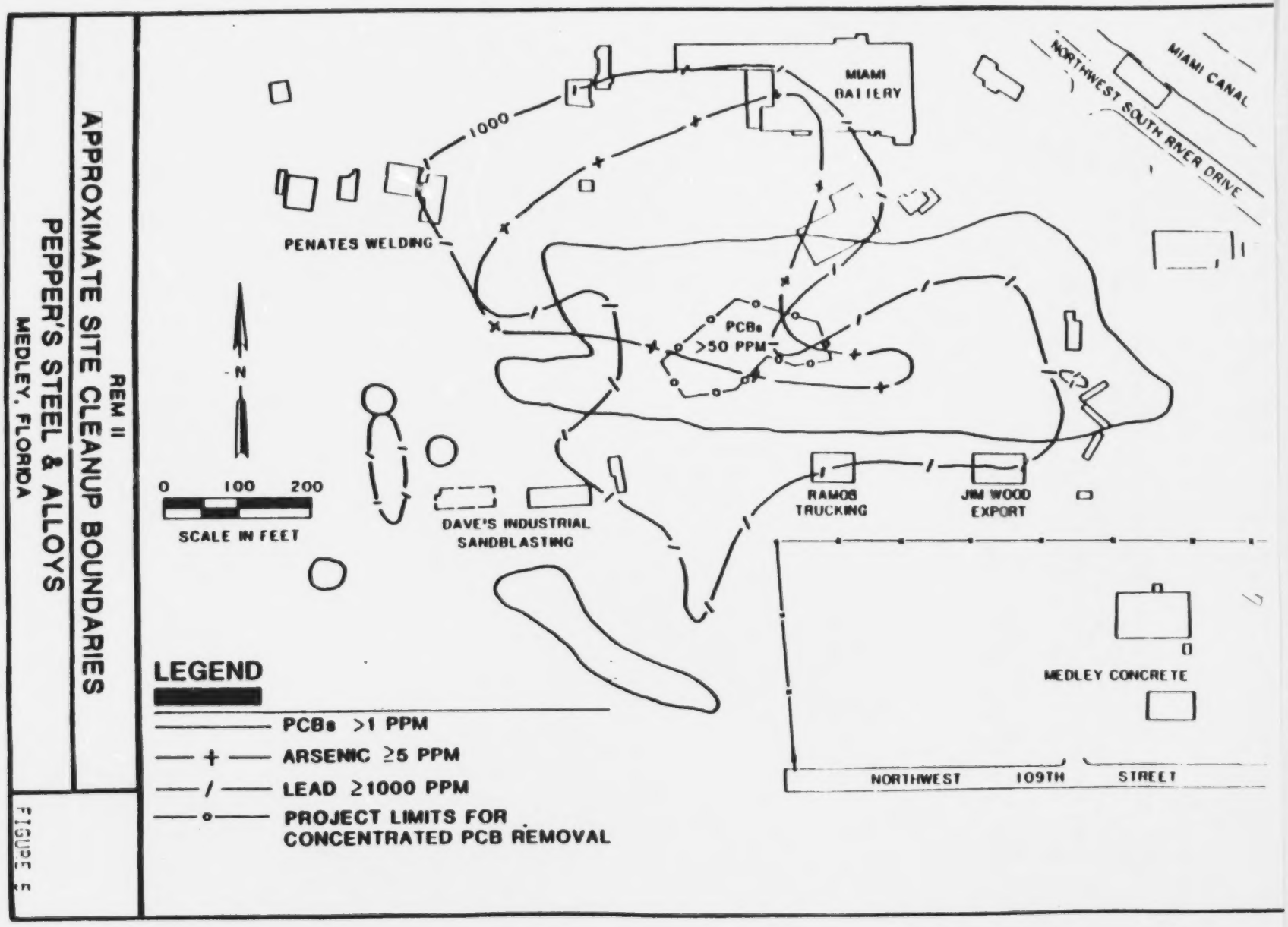
Level of Contaminants

PCBs

It is estimated that approximately 48,000 cubic yards of PCB contaminated soils with concentrations greater than 1 ppm exist on site, of which about 2 percent or approximately 1,000 cubic yards exceed 50 ppm of PCBs. Soils exceeding 50 ppm of PCBs are located in the same general area where free oils have been found. No PCBs were detected on the Miami Canal sediments.

Lead

Concentrations of lead as high as 98,000 ppm (9.8%) were found in the soils. Soil and Material Engineers estimate that about 21,500 cubic yards of soil are contaminated with lead at concentrations exceeding 1000 ppm, and approximately 117,000 cubic yards of soils are contaminated with at least 50 ppm of lead.


REM II
APPROXIMATE SITE CLEANUP BOUNDARIES
PEPPER'S STEEL & ALLOYS
MEDLEY, FLORIDA
FIGURE 5
MIAMI BATTERY
1000
PENATES WELDING
PCBs >50 PPM
MIAMI CANAL
NORTHWEST SOUTH RIVER DRIVE
N
0 100 200
SCALE IN FEET
DAVE'S INDUSTRIAL SANDBLASTING
RAMOS TRUCKING
JIM WOOD EXPORT
MEDLEY CONCRETE
NORTHWEST 109TH STREET
LEGEND
PCBs >1 PPM
ARSENIC ≥5 PPM
LEAD ≥1000 PPM
PROJECT LIMITS FOR CONCENTRATED PCB REMOVAL

Arsenic

The volume of arsenic contaminated soil exceeding 5 ppm is estimated at about 9,000 cubic yards, of which about 80 percent range from 5 to 10 ppm and the remaining 20 percent ranging from 10 to 50 ppm. Only a small fraction of arsenic contaminated soils (42 cy) is estimated to exceed 50 ppm. EP Toxicity results show no detectable arsenic in the leachate.

Tables 1-1 and 1-2, summarize the maximum concentrations of selected compounds in soil and sediments and in the groundwater.

TABLE 1-1

SUMMARY OF MAXIMUM CONCENTRATIONS OF
SELECTED COMPOUNDS IN SOIL AND SEDIMENTS

Compound	Media				
	Fill	Peat	Sand/Clay	Oil	Sediment
PCBs	67	760	1.4	2700	ND
Pesticides	2.8	1	ND	NA	ND
Volatile Organics	3.0	14.3	1	NA	NA
Extractable Organics	631	90	1	ND	NA
Lead	98610 J	7398	1157 J	NA	460
Antimony	1491 J	685 Q	195	NA	ND
Arsenic	76.1	35.6	6.8J	NA	ND
Chromium	216.6	17.9	6.8	NA	26
Cadmium	14.9	3.2	0.8	NA	ND

Source: Soil & Material Engineers - EPA Contract Labs Data
Notes: J = Estimated value
Q = Data QA is questionable
NA = Not Available
ND = Not Detected
All are total concentrations, in parts per million (ppm)

TABLE 1-2

SUMMARY OF MAXIMUM CONCENTRATIONS OF
SELECTED COMPOUNDS IN THE GROUND WATER

Compound	Onsite wells		Offsite wells	
	Concentration, ppb	No. of Samples	Concentration, ppb	No. of Samples
PCB	ND	35	ND	6
Pesticides	ND	35	ND	6
Volatile Organics	4.0 J	22	2.0 J	5
Extractable Organics	90.0 J	12	NA	0
Lead	31	15	8	1
Antimony	ND	35	ND	6
Arsenic	4.5	35	10.0	6
Cromium	18.0	35	7.7	6
Cadmium	6.4	35	6.4	6
Barium	72.0	35	39.0	6

Source: Soil & Material Engineers - EPA Contract Labs Data
Notes: J = estimated values
ppb = parts per billion
NA = Not Available
ND = Not Detected

Known or Suspected Risks of Contaminants

PCBs

Polychlorinated biphenyls (PCBs) may cause several adverse health effects in humans. These effects include: tumor formation, chloracne (long-lasting and disfiguring skin diseases), changes in female reproduction capacity, skin lesions, blindness, hearing loss, liver pathology and/or function changes, jaundice, abdominal pain, uterine ulcers, still births and miscarriages, swelling of joints, waxy secretion of the eyelid glands, general lethargy, joint pain, weakness and vomiting, abnormal menstrual cycles and weight loss.

EPA Ambient Water Quality Criteria for carcinogenicity protection of human health from ingestion of water is 0.0079 ppb at the 10^{-6} risk level. Concentrations that have a risk level of 10^{-6} are estimated to result in an increase of one cancer death per 1,000,000 people who experience PCB exposure over a lifetime.

Lead

The major adverse health effects caused by lead are toxicity to the hemal systems (blood formation), neurological effects, renal dysfunction and lead has been found to be teratogenic to animals. The EPA Interim Primary Drinking Water Standard and Ambient Water Quality Criteria for lead are both 50 ppb. The Centers for Disease Control (CDC) currently defines lead toxicity in a child as a blood level $\geq$ 300 ppm and an erithryocyte protoporphyrin (EP) > 500 ppm, however, CDC is presently revising its criteria for lead toxicity to blood lead levels $\geq$ 250 ppm and an EP $\geq$ 350 ppm.

Arsenic

Arsenic has been found to cause the following adverse health effects: lung cancer, hepatic angiosarcoma and dermal cancer in humans. In addition, arsenic has been found to be fetotoxic, embryotoxic and teratogenic in several animal studies. Chronic exposure to arsenic affects the nervous system and can cause dermal lesions and cardiovascular disease.

The Carcinogen Assessment Group (CAG) of the EPA determined the unit risk for lifetime exposure to arsenic to be 0.405 ppm. This is equivalent to a concentration of 0.0025 ppb in drinking water for a cancer risk of 1 in 1,000,000. For exposure via the consumption of fish, the equivalent concentration is 0.0022 ppb. Since arsenic is often naturally occurring at levels higher than this, the Interim Primary Drinking Water Standard for arsenic is 50 ppb.

Pathways of Migration

Introduction

According to the endangerment assessment and based on comparisons between estimated contaminant concentrations at points of exposure for various potential receptors and applicable standards, the Pepper's Steel and Alloys site may present a substantial endangerment to human health,

welfare, or the environment. Both underground and surface waters in the study area are vulnerable to contamination. Contaminants in the soils may percolate through the ground and adversely impact the Biscayne Aquifer. Figure 6 illustrates the proximity of the site to the Miami Canal, which is also vulnerable. Once contaminants enter the canal they may attach to bottom sediments, seep into the groundwater, or enter the ocean where they can disperse into the marine environment. The canal also provides a significant amount of recharge for municipal well fields down stream of the site.

PCBs

PCBs have been found to bind to living organisms, soil particles and organic material. PCBs bioaccumulate and biomagnify within fish and certain other marine life. PCB molecules are absorbed preferentially, trapped readily by sediments with high surface area to volume ratios and are absorbed more strongly by sediments rich in organics than by inorganic sediments.

Lead

Lead sorption plays a dominant role in lead mobility. The amount of lead absorbed by organics, inorganic solids and other substances depends on the physical characteristics of the environment (i.e. pH, organic content, soil type, etc.). Once lead is absorbed by the soil, it is strongly taken up by plants.

Arsenic

Metallic arsenic is mobile in the environment under certain conditions. The substance is sorpted by sediment, metabolized by organisms and readily cycled through the environment.

Conclusions

The exposure pathways exhibiting the greatest potential endangerment that are quantifiable are air particulate transport of lead contamination to workers onsite and offsite to neighboring residents, groundwater transport of lead and PCBs to private wells in the immediate vicinity of the site, and lead intake due to ingestion from direct contact with local soils. Soil and air quality may also be adversely impacted by PCB contaminants because the PCB molecule is taken up by sediments which can subsequently be transported by wind currents when the soil particles are dry.

PEPPER STEEL SITE PLAN

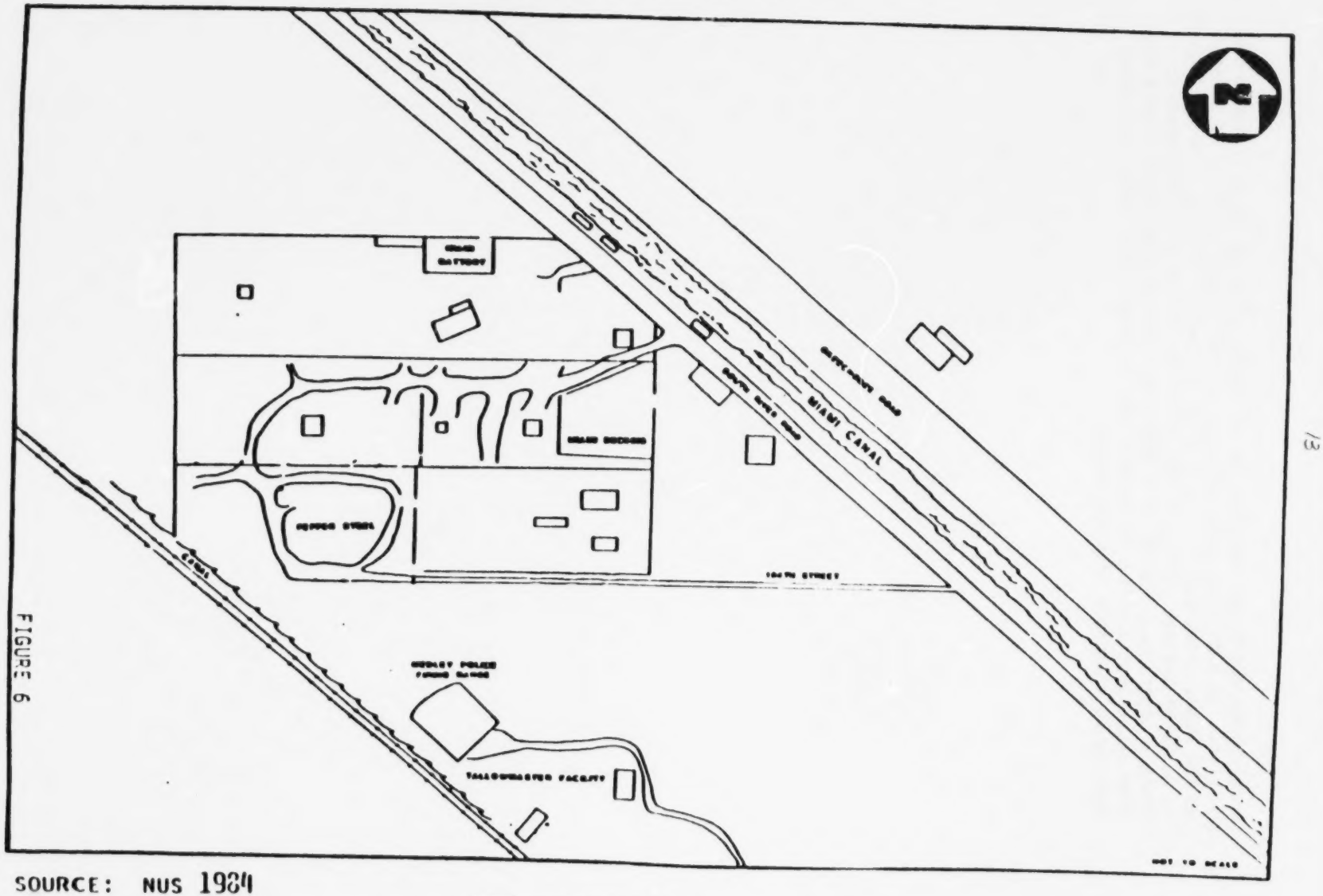


FIGURE 6

SOURCE: NUS 1984

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Local flora and fauna may also be adversely affected by soil concentrations on site. In addition, contributions to lead concentrations in sediments of the Miami Canal due to runoff from the Pepper's Steel site are expected to be large and are likely to represent significant endangerment to benthic organisms. Runoff from Pepper's Steel during storm events may also cause lead and PCB concentrations in Miami Canal water to exceed applicable standards intermittently.

ENFORCEMENT ANALYSIS

In the summer of 1983 the Agency performed an immediate removal at the site. It was necessary to go into federal court to gain site access. Since that time the court has held periodic status calls to keep informed of site progress.

After the immediate removal, the agency began a RI/FS - early 1984. The PRP's proposed a conceptual remedy to the Agency midway (Oct. 84) through the RI/FS. The concept involved a new application of existing technology- use of solidification/fixation for both organics and metals. The Agency encouraged PRP development of this concept in parallel with its completion of the RI/FS. Their development work lagged somewhat behind the Agency's FS completion date. However, the PRP proposed remedy was sufficiently developed to be included in the FS along with other potential remedies for public comment. A final decision on the remedy was delayed pending efforts by the PRP's to provide sufficient substance to their concept. Their work continued through the fall of 1985. Also about midway into the RI/FS the Agency filed a cost recovery action for the immediate removal costs. The court stayed this action until the FS was complete. The court has now set November 10, 1986 as the trial date for this cost recovery. The next status call is scheduled for May 1986.

Since the December 6, 1985, status call the Agency and the PRP's have held six meetings to discuss technical aspects of the site, comments on the FS and various remedies. These meetings usually lasted a full day and were attended by twenty or so Agency and PRP technical personnel and their respective consultants.

The results of these meetings - along with other referenced documents - formed the basis for the detailed evaluation of alternatives and the selection of the PRP proposed remedy as a cost effective remedy adequate to protect public health, welfare and the environment. In addition, these meetings have substantially determined:

- the areas of the site to be included in the remedy
- the actual design details of the fixing agent and its performance characteristics
- the post remedial monitoring plan

While the meeting summaries go into greater detail as to the extensive nature of the issues discussed, appended to this document is a section that highlights some of these issues. The region believes that resolution of as many issues as possible is a necessity where new technology is involved. In this instance, the decision was made to conduct the tests needed to simulate final remedy performance prior to acceptance of the remedy. This was a conscious effort to reduce the possibility of accepting a new application of technology that might fail to perform adequately.

ALTERNATIVES EVALUATION

Public Health and Environmental Objectives

Site specific cleanup objectives at the Pepper's Steel site are based on public health and environmental concerns and are consistent with Section 300.68 (e)(2) of the National Oil and Hazardous Substances Contingency Plan (NCP), EPA guidance, and state and local regulations.

Based on the regulatory guidance and the level of contamination found at the Pepper's Steel Site, the following cleanup objectives were selected:

- Removal and/or treatment of leachable heavy metals and metalloids to prevent contamination of wells and the Biscayne Aquifer which is the sole source of potable water supply for about three million people in the Southeastern Florida area.

- Removal of all PCB contaminated soil to the lowest level below 50 ppm practicably attainable through the use of normal cleanup methods.

The principal environmental and public health concern regarding the existing contamination level at the Pepper's Steel site is pollutant migration into the Biscayne Aquifer and into private wells. Because of the fragile nature of the aquifer and the large number of people who depend on it, the Agency has been particularly careful in its evaluation and selection of a remedy for this site. Any selected remedial alternative must demonstrate, via leachability studies and long-term monitoring, that levels of contaminants released into drinking water sources are below the acceptable leachate concentration limits. Limits were developed in the endangerment assessment and were based on either EPA Ambient Water Quality Criteria or Primary Drinking Water Standards, as available.

Acceptable leachate concentrations were derived by considering potential exposure via hypothetical wells located in the immediate vicinity of the site. In such a scenario, infiltrating rainwater over a broad area of the site is assumed to generate leachate that percolates vertically to the groundwater and creates a contaminant plume that is carried along with with groundwater flow. The plume is then intercepted near the site boundary by a private well. The well will draw water from the contaminated plume. Thus, acceptable leachate concentrations for the Pepper's Steel site should be equal to applicable drinking water standards, or similar criteria, with consideration for dilution.

Based on the acceptable leachate concentrations, modeling of groundwater flow, regulatory requirements and the extent of contamination found at the site, the endangerment assessment determined that three contaminants were found in sufficient concentrations to require action - pcb, lead, and arsenic.

The following cleanup levels were selected for these contaminants in order to achieve acceptable leachate concentrations:

- Store, analyze, treat, and dispose of all PCB contaminated free oils encountered during the site excavation.

- Remove, contain, stabilize, fix or treat soils containing the following levels of contamination:

  PCBs $\geq$ 1 ppm (Approximately 48,000 c.y.)

  Lead $\geq$ 1,000 ppm (Approximately 21,500 c.y. of which substantial amounts are commonly contaminated with PCBs)

  Arsenic $\geq$ 5 ppm (Approximately 9,000 c.y. are commonly contaminated with lead)

ALTERNATIVES CONSIDERED

Based on the extent of contamination documented in the Remedial Investigation, a list of feasible technologies, summarized in Table 4, was developed for the general response actions identified as:

- TSD of free oils found during site excavation

- TSD of soils contaminated with PCBs and heavy metals

The list of possible technologies was screened to eliminate options that would not provide adequate protection to the environment, public health, and public welfare; or would cost substantially more than the other technologies without providing significantly greater benefits. The remaining technologies were evaluated in greater detail to identify a preferred technology that: (1) provided similar environmental or public health benefits with a lower cost, or (2) was more reliable, with the same or only slightly higher cost. The preferred technologies were then combined to form the following nine remedial action alternatives:

TABLE 4
GENERAL REMEDIAL TECHNOLOGIES
PEPPER'S STEEL AND ALLOYS
MEDLEY, FLORIDA

General Response Action	Technologies
Containment	Capping and encapsulation
Complete removal	Soils and floating oils found during excavation
Partial removal	Soils and floating oils found during excavation
Onsite treatment	Partial incineration, extraction, solidification, chemical fixation, and physical treatment
Offsite treatment	Partial incineration, biological, chemical, and physical treatment
In-situ treatment	Soil flushing and neutralization
Storage	Temporary storage facilities for water and oils
Onsite disposal	Landfill
Offsite disposal	Landfill

- Alternative 1: Solidification of all soils contaminated with PCBs and heavy metals.

- Alternative 2: Solidification of PCB contaminated soils and stabilization of soils containing heavy metals.

- Alternative 3: Solidification of PCB contaminated soils and encapsulation of soils containing heavy metals.

- Alternative 4: Offsite disposal of soils exceeding 50 ppm PCBs and solidification/stabilization of soils containing heavy metals and PCBs.

- Alternative 5: Extraction of PCB contaminated soils exceeding 1 ppm of PCB's and solidification of soils containing heavy metals.

- Alternative 6: Extraction of PCB contaminated soils with or exceeding 50 ppm of PCBs and partial containment (by surface capping) of areas containing PCBs above 1 ppm.

- Alternative 7: Onsite incineration of PCB contaminated soils exceeding 50 ppm and solidification of soils containing heavy metals and PCBs between 1 and 50 ppm.

- Alternative 8: Incineration of PCB contaminated soils at the Dade County incinerator with onsite stabilization and disposal of incinerated soils, plus stabilization of soils which are not incinerated, but contain heavy metals.

- Alternative 9: Extraction of PCB contaminated soils exceeding 50 ppm of PCBs and solidification of soils containing heavy metals and less than 50 ppm PCBs.

Evaluation Of Remedial Action Alternatives

The five criteria that have been identified in the National Oil and Hazardous Substances Contingency Plan (NCP) for the evaluation of remedial action alternatives are: technical feasibility, public health effects, environmental impacts, institutional concerns, and cost. These criteria provide a logical framework for the evaluation and analysis of the remedial action alternatives. The adverse and beneficial impacts of each alternative in terms of the criteria were analyzed and documented. Table 6 illustrates the cost estimates of these alternatives.

Based on the five criteria identified in the NCP, six of the remedial alternatives were eliminated. Table 7 lists these rejected alternatives and the reason (s) for their elimination.

TABLE 6

COST ESTIMATES OF REMEDIAL ACTION ALTERNATIVES

Remedial Alternative	Capital Cost $1000	Annual Cost $1000	Present Worth Cost
1 Solidification	5,355	258	5,613
2 Solidification/Stabilization	5,212	258	5,470*
3 Solidification/Containment	5,616	404	6,020
4 Partial Off-site Hauling, Stabilization and Solidification	6,236	258	6,494
5 Extraction/Solidification	7,147	90	7,237
6 Extraction/Containment	3,383	404	3,787
7 Incineration/Solidification	6,152	258	6,410
8 Incineration/Stabilization	8,842	90	8,932
9 Partial Extraction/ Solidification	6,747	258	7,005

* The PRPs have estimated the cost of this alternative at 2.6 million dollars. Their estimate differs from some of the items specified in the EPA estimate:

- Post cleanup monitoring wells not included
- Smaller surcharge for level C and level D operation
- PRPs estimate higher production rates
- etc.

Table 7

Reasons for the Elimination of Six Remedial Action Alternatives

Alternative	Reason Eliminated
1. Solidification	Stabilization/Solidification provides better waste isolation for similar costs.
3. Solidification and Encapsulation	Solidification is less effective than stabilization for metals. Containment is less effective than either solidification or stabilization.
4. Offsite Disposal and Solidification/Stabilization	More costly than other alternatives with minimal reduction in risk. Added risks in transportation. Additional resource utilization in transportation.
5. Extraction and Solidification	Extraction still experimental technology. Range of costs very uncertain.
6. Extraction and containment	Extraction still experimental technology. Containment is less effective than solidification or stabilization.
9. Extraction and Solidification	Extraction is still experimental technolo Solidification is less effective than stabilization.

Detailed Analysis of Final Alternatives

1) No-Action

The no-action alternative does nothing to mitigate the potential for substantial public exposure to the contaminants on site. The modified no-action alternative would provide groundwater monitoring only. This alternative does nothing to mitigate the exposure pathways of contact, ingestion and inhalation. Groundwater movement rates in the Biscayne Aquifer are such that adequate warning of contaminant movement might not be possible. The Agency realizes that typical groundwater movement in the Biscayne Aquifer is a few feet per day. We also recognize that localized conditions can result in much faster or slower movement. Some data gathered to date suggest that current groundwater movement is slow in the immediate site area. In our judgement it is inappropriate to rely on a localized condition of unknown stability given the population dependant on this aquifer.

2) Incineration/Solidification (alt. #7) and Incineration/Stabilization (alt. #8)

Incineration is a proven and effective method for destruction of PCB contaminated soils. The elimination of PCBs from the environment, if feasible, would be the best action to take. Because incineration has the potential to accomplish this, it is deserving of a thorough analysis of its potential use. The incineration alternatives for the PSA site, however, are complicated by the fact that lead concentrations exceeding 90,000 ppm are present in the PCB contaminated soil.

Incineration will introduce two potential problems. First is the volatilization of metals contained in the soils. Once the materials are volatilized, they will condense on the smaller particles in the gas stream (particles less than 2 microns in diameter). The incinerators that are presently available for incinerating organic materials are not equipped with air pollution control equipment that is effective for controlling small particle emissions. Thus, if incineration is selected for the PSA site, technology will have to be developed to control small particle emissions from these incinerators.

The second problem introduced by incineration is the disposal of material collected by air pollution control systems. If scrubbers are used exclusively, scrubber waters and the sludge contained in the scrubber water will have to be disposed of. If the EPA mobile incinerator is considered as an example, approximately 4.3 million gallons of contaminated water will have to be disposed of over the term of the project. If a bag house is used to control fine particle emissions, the filter cake from the bag house will have to be disposed of. The disposal of these materials can be incorporated in with the fixation of soils at the PSA site, however, the mobility of the metals contained in these materials could differ significantly from the mobility of the metals in the soils currently proposed for solidification.

Regarding current experience on the fate of the metals during the incineration process, 2-16% of the metals can be expected to be discharged from the incinerator in the stack gas (following either a scrubber or bag house). Depending upon the properties of the metals, varying fractions of the metals remaining will end up in the incinerated soil or in the material collected in the scrubber or bag house. Without the test burn using soil from the PSA site, it is difficult to predict the fraction of metals that will be discharged from the stack or in the incinerated soil and air pollution control equipment waste.

If incineration were selected as a remedy, a test burn would be required, air pollution control technology would have to be developed to control fine particle emissions from the incinerator, and the air pollution control equipment on an existing incinerator upgraded.

Regarding current experience on the incineration of materials containing metals, most fixed base incinerators limit the metals content of materials they will accept and EPA has had no experience incinerating materials containing significant levels of metals in their mobile incinerator.

Chemical Waste Management -- Chicago, IL — lead limit of 100 ppm.

Rollins Environmental -- Deerpark, TX lead limit of 500 ppm

Lead concentrations at the site range up to 98,000 ppm. All soils potentially incinerated would exceed 1,000 ppm.

The estimated cost could range from $6.4 - 10.2 million for incineration (2400 cu yd)/solidification and from $8.9 - 13.2 million for incineration (20,000 cu yard)/stabilization.

3) Solidification/Stabilization (alt.#2)

Cement-based and pozzolanic (materials used in cement because when mixed with lime it hardens underwater) materials have been used for stabilization of chemically hazardous and radioactive wastes. The solidification/ stabilization alternative at the Pepper's Steel & Alloys, Inc. site would involve chemically fixing (stabilizing) soils contaminated with heavy metals. Soils with PCB concentrations exceeding 1 ppm would be solidified.

Fixation can be an acceptable alternative for addressing the Pepper's Steel and Alloys, Inc. site. Fixation controls the movement of constituents in soils by solidifying the soil particles and by stabilizing the constituents in the soil. Stabilization chemically binds constituents within the soil reducing dissolution and diffusion rates. Solidification reduces the movement of waste through the soil mass thereby reducing advective transport from the soil and decreasing the exposed surface area and diffusion potential. Throughout this document fixation, stabilization and solidification are all used to refer to the particular process/mixture proposed for this site.

A concern with the fixation alternative is the long-term integrity (weathering resistance) of the fixed mass. It must be determined whether or not the near-surface groundwater or infiltrating rainwater will attack the fixed mass. This problem has been investigated and a soil fixation blend development and testing program has achieved the goal of the fixation/stabilization work plan. A formula to fix the metals and PCBs in place at Medley, Florida, has been identified. site peat and fill fixed with this blend passed the engineering performance criteria and leaching criteria.

In summary, testing has shown that the solidified/stabilized mass will meet the cleanup objectives chosen for the site. The estimated cost of this alternative ranges from $5.5 - 7.0 million (EPA estimate).

COMMUNITY RELATIONS

Several progress meetings - open to the public - were held in county offices during the RI/FS. TV and newspaper interviews were granted and a public meeting and public comment period on the FS were held in Dade County on October 9, 1985. Comments received on the FS were responded to in summary form in the attached responsiveness summary.

CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS

The alternatives were evaluated against applicable or relevant and appropriate federal public health and environmental requirements as required by the National Contingency Plan (40 CFR 300). Table 8 summarizes the results of this evaluation. As Table 8 shows, alternatives 1,2,3,4,5,7,8, and 9 could be made to comply with these requirements.

SUMMARY OF POTENTIAL INSTITUTIONAL REQUIREMENTS OF ALTERNATIVES
PEPPER'S STEEL AND ALLOYS
MEDLEY, FLORIDA

25

Institutional Criteria	Alternative 1	2	3	4	5	6	7	8	9	No Action
Hazardous Waste Regulations (RCRA Subtitle C, 40 CFR, Part 864)	C	C	C	C	C	C	C	C	C	N
Clean Air Act	D	D	D	D	D	D	C	C	D	D
Pretreatment Standards for Discharge into POTW	C	C	C	C	C	C	C	C	C	D
PCB Requirement for Disposal (40 CFR Sub-part D.761.60. "Note"	C	C	C	C	C	C	C	C	C	C
D.O.T. Hazardous Materials Transport Rules	D	D	D	C	C	C	D	C	C	D
Recommended Maximum Concentration Limits (RMCL)	C	C	C	C	C	N	C	C	C	N
Federal Water Quality Criteria	C	C	C	C	C	C	C	C	C	N
EPA RCRA Design Guidelines	C	C	C	C	C	C	C	C	C	N
Permitting Guidance	C	C	C	C	C	C	C	C	C	N
Guide to Disposal of Chemically Stabilized and Solidified Waste	C	C	C	C	C	D	C	C	C	D
NPDES Guidance	C	C	C	C	C	C	C	C	C	D
Pretreatment Guidance	C	C	C	C	C	C	C	C	C	D

LEGEND: C - Compliance / N - Non-Compliance / D - Not Relevant/Applicable

Alternative 1 - Solidification
Alternative 2 - Solidification and Stabilization
Alternative 3 - Solidification and Containment
Alternative 4 - Partial Offsite Handling, Stabilization and Solidification
Alternative 5 - Extraction and Solidification
Alternative 6 - Extraction and Containment
Alternative 7 - Incineration and Solidification
Alternative 8 - Incineration and Stabilization
Alternative 9 - Partial Extraction and Solidification

RECOMMENDED ALTERNATIVE

Of the ten alternatives evaluated for this site, six were eliminated in the evaluation process (see Table 7). The four remaining alternatives [no-action, partial incineration (alt. #6 & 7) and solidification/stabilization (alt. #2)] were subjected to a detailed evaluation to select a cost effective remedy providing adequate protection to public health, welfare and the environment.

1) The no-action alternative was not rejected previously because of Agency requirements to evaluate it beyond the screening stage. The no-action alternative was rejected because it did nothing to mitigate the potential for substantial public exposure to the contaminants on site. It met none of the cleanup objectives. Similarly the modified no-action (monitoring only) option was rejected. While it might provide an early warning of contaminant release from the site via the groundwater, travel times in the Biscayne Aquifer are such that the time to reach a sensitive receptor could be much less than any reasonable monitoring interval. In addition it does nothing to mitigate the other exposure pathways - contact, ingestion and inhalation. For these reasons, no-action and no-action (modified) were rejected.

2) Incineration (#6 & #7) of either 2,400 or 20,000 cubic yards of contaminated soils with solidification/stabilization of the remainder has serious technical, environmental and cost disadvantages. Technology would have to be developed to incinerate the material safely. The evaluation of this alternative concluded that 2-16% of the lead might be expected to escape into the atmosphere above highly populated areas. Schedules were examined for existing and planned incinerators and at least three years were estimated to implement these remedies. The costs of these alternatives are higher than solidification/stabilization and the uncertainty of these costs is much greater.

3) The recommended alternative (#2) for the Pepper's Steel and Alloys, Inc. site includes:

   - Collection of all free oil and TSD offsite according to TSCA regulations.
   - Excavation of soils exceeding 1 ppm PCB, 1,000 ppm lead and 5 ppm arsenic.
   - Solidification/stabilization of these soils with a cement-type mixture and placement on site.
   - Institutional controls to insure future land uses compatible with the remedy.

° Monitoring of the effectiveness of this remedy.

The solidification/stabilization alternative attains all applicable or relevant and appropriate federal public health and environmental requirements. It also meets all of the cleanup goals established for this site.

Solidification of PCB contaminated soils modifies the soil, rendering the contaminant less soluble and/or decreases the effective surface area to minimize the leaching of contaminants. Soils containing heavy metals would be chemically fixed (stabilized) rather than solidified.

In the chemical stabilization process the heavy metals would be either made insoluble or detoxified through the addition of chemicals. A high level of risk reduction is attainable because exposure pathways via surface and groundwater are virtually eliminated. Volatilization is also reduced or eliminated. Relative to the no-action alternative, stabilization of heavy metals coupled with solidification of PCBs greatly reduces risks of exposure to contaminants at the site. An evaluation by the Agency of recent work by the PRPs to design and test a solidification/fixation system for this site has concluded that this remedy has a high probability of achieving the cleanup goals established.

OPERATION AND MAINTENANCE (O & M)

The projected O & M activities required to ensure the effectiveness of the solidification/stabilization remedy consist of groundwater monitoring. Project O & M costs are estimated at $42,500 annually for post remedial monitoring.

SCHEDULE

The PRPs have indicated their desire to begin design of this remedy upon its approval by the Agency. They would expect to begin actual remedial construction activities in early summer. The total time estimated by the PRPs from selection of the remedy to site work completion is 47 weeks.

FUTURE ACTIONS

Following this decision document the Agency will work to negotiate a consent decree with the PRPs for implementation of the remedy. This decree will be submitted to the Court for approval. Many of the technical details to be included have been agreed to in principle:

- method to determine area to be addressed
- design parameters and performance of fixative agent
- post-remedy monitoring
- institutional controls needed

After completion of the remedy the only continuing need will be monitoring to verify that the remedy is performing as designed.

MAJOR ISSUES

The following is a highlight of some of the issues addressed in several technical meetings between EPA and potentially responsible parties (PRPs) prior to an Agency decision on the remedy.

Issue: Will the remedy (solidification/fixation) be effective?

A. Conduct bench scale tests
   1. Are the tests representative of the "real world"?
   2. What specific tests?
      a. leaching (column, EP Toxicity,...)
      b. structural strength; what is it?, is it adequate?
      c. is it hazardous by regulatory definition?
   3. Did intentional spiking of samples with waste alter their performance in the various tests?

B. Mechanism for release of wastes to environment after the remedy is in place.
   1. Mass transport through the solidified mass
   2. Diffusion from the solidified mass
   3. Acid Rain
   4. Incompatible land uses with acid or solvent discharges
   5. Accidents; massive spill of acids, solvents, etc.
   6. Flooding during wet hurricane, etc., resulting in over land flow

C. Long term stability - millenia
   1. Examine existing performance of ancient grouts (6K-8K years)
   2. Compatibility with South Florida environment; is environment destructive to the remedy.

D. Others
   1. Are contaminants introduced by fixing agent?
   2. Surface sealing reactions - calcium hydroxide/carbonate may-seal the surface of the solidified mass retarding diffusion of contaminants from the solidified mass
   3. Fracture of solidified mass - will this result in contaminant release

Issue: Are liners/cover needed? Would they be beneficial or harmful?

A. Would liner create a bathtub effect generating "hot leachate"
B. To be useful a liner should have permeability equivalent to wasteform
C. Long term liner integrity - will it last as long as wasteform?
D. Constructability - can we place a liner underwater?
E. Buffering capacity of cover - will cover protect the solidified mass from spills/acid rain?

Issue: Cleanup goals. Area of site to be fixed

A. Rationale for cleanup goals
B. Contour line between "clean" & "dirty"
   1. Which contaminants are of real concern because of concentration or toxicity?
   2. Do we have confidence in sufficiency of data - kriging
   3. Do we have confidence in accuracy of contour between "clean" and "dirty" - kriging

Issue: Detailed Evaluation of Alternatives; Are all alternatives proposed realistic?

A. Incineration
   1. Inability of current incinerators to adequately control metal emissions
   2. Availability of incinerators - are current units tied up
   3. More difficult to manage, project more complex
   4. More costly
   5. Substantially more time required
   6. Generates additional waste to be handled
   7. Addresses only one site contaminant
   8. Eliminates contaminant from the environment completely

B. Off-site disposal
   1. Merely storage in someone else's back yard
   2. Transportation risks to disposal site
   3. More costly than some alternatives

C. Solidification/fixation
   -issues addressed previously

Issue: Variation between PRP & Agency cost estimates

A. Rate of work different for Agency and PRP estimates
B. Add-on for Level C vs. Level D, Agency and PRP used different rates
C. Agency percentage add-ons for indirects - not included in PRP estimates
D. Agency contingencies not included in PRP estimates

Issue: Difficulties during Remedy Construction

A. Potential to release contaminants during excavation
B. Volatiles released from soils creating air problem or requiring higher level of worker protection
C. Debris, rubble, scrap iron & concrete. What to do with it? Will it damage site equipment?
D. Free oils encountered . How to capture? How to dispose?
E. Contaminant released from fixative while curing? Can we test this in advance?

F. Site drainage after the remedy in place. Will the large impervious area create flooding? Will it enhance release of contaminants from the solidified mass?

Issue: Post Remedial Monitoring

A. Can monitoring actually indicate remedy performance?
B. Effect of "clean" area contributions. Are we not monitoring the remedy but rather the concentrations below the cleanup criteria?
C. Physical site constraints. Are buildings in the way of a proper well location?
D. Realistic/reliable detection limits. Are desired levels below that reliably achieveable?
E. Action levels - if above these levels the remedy has failed.
F. Groundwater flow direction
   1. Extremely transmissive area results in small gradients
   2. Small gradient very difficult to measure
   3. Canal influences - does groundwater move to and from the canal easily?
   4. Tidal influences - are there any?
   5. Well field influences from opposing directions - Does the Northwest wellfield influence the site groundwater. Does the the Miami Springs wellfield (in the opposite direction)?
G. Can we monitor through disturbed areas?
H. Does the rapid dilution in the aquifer exaggerate distance effects and make accurate detection of contaminant release from the site difficult or impossible?

ORBAN:CDM:DK#4:DOC#10:2/13/86

Public Meeting Summary

Pepper's Steel Site
Medley, Florida
October 9, 1985 7:00 - 8:30 p.m.

INTRODUCTION

This is a summary of the public meeting held to discuss the results of the Feasibility Study (FS) on the Pepper's Steel site in Medley, Florida. The meeting was held in the Medley Town Hall and lasted from 7:00 p.m. to 8:30 p.m. Approximately 20-25 people attended, including members of the media and representatives from Florida Department of Environmental Regulation, Dade County, Department of Environmental Resources Management (DERM), U.S. EPA Office of General Counsel, and the potentially responsible parties (PRPs).

Also present at the meeting were Richard Johnson, REM II Regional Manager; Mike Henderson, U.S. EPA Region IV Superfund Community Relations Coordinator; Udai Singh, a representative from CH2M Hill (an EPA contractor that performed some original work on the site); and Sara Watson, REM II Community Relations Specialist.

EPA Team Leader Jim Orban opened the meeting by describing the Superfund program and the history of this particular site. He then explained the status of the site and the alternatives being proposed by EPA. The REM II Site Manager, Elio Arniella, continued by presenting the results of the remedial investigation (RI). Orban finished the program by explaining the remedial alternatives and inviting the citizens to send him any comments. The audience asked questions throughout the presentation. Their questions and answers are paraphrased, summarized and categorized by relevant topics below. Identity of the questioner, where known, is indicated.

QUESTIONS AND ANSWERS

1. COMPARISONS BETWEEN PEPPER'S STEEL AND OTHER AREAS

PRP Representative: How does the remedial activity at the Pepper's Steel site compare to activity at the Miami Drum site? Where were all the PCBS from the Miami Drum site taken? What was the amount of PCBs at that site? How much material was removed? Operators at one landfill in Alabama where some of the contaminants were taken would not release information on their landfill.

EPA Official:

The Metropolitan Dade Transit Authority and DERM have information on that site available to the public. Actions are now being designed and planned to minimize the impact of that site on the ground water. The total amount of contaminated material removed from the site was 8,500 cubic yards.

PRP Representative: Why will the town of Medley not allow any water sources to drain into the Miami Canal, when all around Medley everything drains into the Canal?

EPA Official:

We defer to the town of Medley on this question.

2. DIFFERENT TECHNOLOGIES/COMPANIES

Representative of Detox Industries: Has EPA considered using a company called Detox Industries that has been approved to use microbiological approaches to do on-site cleanup of PCBS in Region VI?

EPA Official:

EPA has not looked at this particular company. Can they handle the clean-up of heavy metals? Bear in mind that EPA is looking for long-term, proven technologies. Furhtermore, that technology can only address part of the problem at this site. The cost of the work to clean up the additional contaminants has to be added onto any cost figure associated with the technology you are describing.

EPA has examined these alternatives to a degree that is not evident in the short time period available to present these findings. We did evaluate this particular technology before and decided it did not warrant further investigation.

CDM Representative:

Furthermore, microbiological techniques often cannot be used near a public drinking water aquifer, as is the case at Pepper's Steel. Doing so could have serious technical and public health ramifications.

Also microbiological techniques are difficult to use when the contaminants involve more than one metal; there the results are often hard to predict.

3. POTENTIALLY RESPONSIBLE PARTY ACTIVITIES

Unidentified Speaker: Have the PRPs done any studies at the site and how do their results and cost estimates compare to EPA's?

EPA Official:

Yes, the PRPs have conducted studies at the site to evaluate site conditions and to develop a potential remedy for the site. The differences between the studies would be apparent upon review of them. In addition, the PRPs have commented on our work and identified differences. We have considered their comments and responded to those comments.

4. SUPERFUND PROCESS

PRP Representative: The Miami Battery Manufacturing Company gives money to Superfund. How is the money used?

EPA Official:

The tax on companies goes into a fund, used for sites where no PRPs can be identified.

PRP Representative: But someone must own theses sites.

EPA Official:

Yes, but there are cases where the owner has a yearly income of 4,000 and the clean-up will cost $5 million. In such a case, there is no viable PRP.

PRP Representative: Miami Battery has passed inspections for twenty years and been told constantly that we could have a battery manufacturing operation here. The wells near us were approved for drinking water. Why is EPA telling us now that our practices are not safe and the wells are contaminated?

EPA Official:

EPA now knows that many activities that were legal in the past should not be allowed to continue today; because the knowledge of environmental problems is constantly expanding, EPA does not seek criminal sanctions for activities that were legal at the time they were conducted.

Unidentified Speaker: Will there be meetings the next two Wednesday nights?

EPA Official:

No. This is the only public meeting for this site.

5. Polychlorinated Biphenyls (PCBs)

PRP Representative: What is the total amount of PCBs at the site?

EPA Official and CDM Representative:

We estimate that 48,000 cubic yards contain PCBs in excess of 1 ppm.

Unidentified Speaker: Were the PCBs at the site buried there or did they leak into the site from another location?

EPA Official:

As alleged in the complaint filed by the United States in this action, there were releases and threatened releases of hazardous substances, including PCBs, into the environment at the Pepper's Steel facility.

PRP Representative: Do the PCBs move rapidly through the soil?

EPA Official:

That depends on how they got into the soil and how concentrated they are. This issue is addressed in the endangerment assessment.

6. REMEDIAL ACTION

Unidentified Speaker: When will EPA start the final clean-up?

EPA Official:

We are currently conducting the public comment period on the remedial alternatives. After the comment period ends, we will compile the Responsiveness Summary. Since the PRPs have expressed interest in doing the cleanup, we will also start discussions with them, which will probably take a few months. After those negotiations are settled, the cleanup can begin.

PRP Representative: How long will the impermeable layer described in one of the alternatives last?

EPA Official:

It is a double layer. Most liner manufacturers talk in terms of at least thirty years. It is not the recommended solution for Pepper's Steel because of the possibility
that it could crack and allow the contaminants to escape.

PRP Representative: How is the extraction of the soil done?

EPA Official

It could be done in several ways. One is to use steam to make the oil less sticky and easier to remove. However, we do not know of any full-scale operation that has been successful in using extraction to clean up PCBs.

Unidentified Speaker: Does the term "heavy metals" used in the FS report mean only lead?

EPA Official and CDM Representative:

In this case heavy metals mainly refers to lead, arsenic, and antimony since they are the most prevalent. There are five other metals--mercury, chromium, cadmium, copper, and zinc--that exist in lower quantities so they are less of a concern.

RESPONSIVENESS SUMMARY

Comments received during the public comment period are grouped under issue heading for response.

ISSUE: Draft FS language very general with minimal consideration of specific site conditions

RESPONSE: Much of a feasibility study does appear like any other feasibility study because they are similarly organized and often evaluate similar remedies. A significant difference is apparent when one realizes that site specific situations form the basis for the evaluation of potential remedies. We may well be evaluating a remedy identical to one evaluated at another site but the cost, scope, feasibility, constructability, etc. of that remedy are evaluated based on this specific site. Other sections of the feasibility study, such as the endangerment assessment, are more obviously site specific.

ISSUE: Cost estimates in draft Feasibility Study (FS) are unrealistically high.

RESPONSE: Cost is only one factor used to evaluate an alternative. The Agency uses a uniform criteria for preparing remedy cost estimates-Remedial Action Costing Procedures Manual-that attempts to develop a complete and accurate cost estimate for all alternatives. This manual is based on both standard cost estimating principles and Agency Superfund experience. In this manner the Agency feels that alternatives will be costed uniformly across the country and the cost estimates will reflect actual experience at superfund sites

In the case of the solidification/fixation alternative the commentor's estimate was $2.6M. When Agency and commentor's estimates were compared on an equal basis, the results were similar.

ISSUE: Draft FS does not adequately address the environmental risks associated with several of the alternatives.

RESPONSE: The FS did note the risks and the Agency is well aware of them. Several meetings were held between the Agency and the commentors wherein these risks were discussed in detail and quantified as well as possible. The reader is referred to the final FS and the meeting summaries for more detail on these risks.

ISSUE: The draft FS proposes unrealistically low performance criteria for remedies.

RESPONSE: After numerous discussions between EPA and the PRPs we have agreed that the remedy can meet the performance criteria. The remedy should be adequate to meet drinking water standards or the 1:1,000,000 cancer risk levels. In developing standards the Agency has concluded that the standards chosen are necessary to protect public health, welfare and the environment.

COMMENT: Endangerment Assessment is not specific enough or detailed enough.

The endangerment assessment (E/A) presents toxicity and fate and transport information about contaminants specific to the site. Much of this data is contaminant specific and would be similar regardless of the site where the contaminant is found. However, when the E/A takes this data and evaluates the characteristics of the contaminants in relation to site conditions, factors affecting migration, pathways to potential receptors, etc., then the E/A is site specific.